

SEQUENCE LISTING

<110> Novozymes A/S

<120> Orotate Transporter Encoding Marker Genes

<130> 10556.204-WO

<160> 22

<170> PatentIn version 3.3

<210> 1

<211> 921

<212> DNA

<213> Lactococcus lactis

<220>

<221> CDS

<222> (1)..(921)

<223> Orotate transporter encoding ORF

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Met Tyr Ile Tyr Leu Ala Phe Ala Leu Val Gly Gly Phe Leu Leu Ala	
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aat caa aat cca atc aat gcg gat tta cga aaa att gtt ggc tca cca	96
Asn Gln Asn Pro Ile Asn Ala Asp Leu Arg Lys Ile Val Gly Ser Pro	
20 25 30	
ttt ttg gcc tct gga att tcc aac ttt gtt ggt tcg att ttt tta gga	144
Phe Leu Ala Ser Gly Ile Ser Asn Phe Val Gly Ser Ile Phe Leu Gly	
35 40 45	
att atc act tta gtg acc agt caa aca ctt ttt cct agt ttt caa ttt	192
Ile Ile Thr Leu Val Thr Ser Gln Thr Leu Phe Pro Ser Phe Gln Phe	
50 55 60	
gtt ggc tca cac cca gta tgg ata tgg att ggt ggc gtt ctt ggt ggc	240
Val Gly Ser His Pro Val Trp Ile Trp Ile Gly Gly Val Leu Gly Gly	
65 70 75 80	
att ttt cta aca tct aat gtt tta ctt ttc cca aga tta gga gct gtc	288
Ile Phe Leu Thr Ser Asn Val Leu Leu Phe Pro Arg Leu Gly Ala Val	
85 90 95	
caa acg gtg att tta cct att ttg ggt cga ata ttg atg ggc aca ctt	336
Gln Thr Val Ile Leu Pro Ile Leu Gly Arg Ile Leu Met Gly Thr Leu	
100 105 110	
att gat tca ttt ggc tgg ttt cat gcc atg caa ctt ccg atg act ctg	384
Ile Asp Ser Phe Gly Trp Phe His Ala Met Gln Leu Pro Met Thr Leu	
115 120 125	
atg cgc ttt ttg gga gtt atc att act tta gct ggc gtt att gtc gcg	432
Met Arg Phe Leu Gly Val Ile Ile Thr Leu Ala Gly Val Ile Val Ala	
130 135 140	
gtt gtt ctt cct aat tta aaa gaa aaa gaa gca gaa acg cac caa act	480
Val Val Leu Pro Asn Leu Lys Glu Lys Glu Ala Glu Thr His Gln Thr	
145 150 155 160	
aac tta cta ggc tgg cga att tgg gcg gtc atc gtt ggc gca atg tcg	528
Asn Leu Leu Gly Trp Arg Ile Trp Ala Val Ile Val Gly Ala Met Ser	
165 170 175	

gct gct caa caa gca att aat ggc aga ttg gga gtt tta ctt gaa aac 576
 Ala Ala Gln Gln Ala Ile Asn Gly Arg Leu Gly Val Leu Leu Glu Asn
 180 185 190
 act gca caa gca acc ttt gtt tcg ttc ttc att gga ttt tta gct att 624
 Thr Ala Gln Ala Thr Phe Val Ser Phe Phe Ile Gly Phe Leu Ala Ile
 195 200 205
 ttt atc gtg tct ctt ttt att gac cgc cgt ttg cca aaa att tca gaa 672
 Phe Ile Val Ser Leu Phe Ile Asp Arg Arg Leu Pro Lys Ile Ser Glu
 210 215 220
 tta aaa aaa gca aaa cct tgg aat gga att ggt gga ttt tta gga gcc 720
 Leu Lys Lys Ala Lys Pro Trp Asn Gly Ile Gly Gly Phe Leu Gly Ala
 225 230 235 240
 tca atc gtt ttt gca aca gtc gtt gct gtt ccg caa att ggt gca ggg 768
 Ser Ile Val Phe Ala Thr Val Val Ala Val Pro Gln Ile Gly Ala Gly
 245 250 255
 ctg aca att atg atg ggc ttg att gga caa att tta ggc agt atg ttg 816
 Leu Thr Ile Met Met Gly Leu Ile Gly Gln Ile Leu Gly Ser Met Leu
 260 265 270
 gtt caa caa ttt ggt tgg tgg cgc tca agt aaa tat ggc att caa att 864
 Val Gln Gln Phe Gly Trp Trp Arg Ser Ser Lys Tyr Gly Ile Gln Ile
 275 280 285
 tgg caa att gtt ggg att cta att atg ctg acc gga ata ata ttc att 912
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 Lys Phe Leu
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 Phe Leu Ala Ser Gly Ile Ser Asn Phe Val Gly Ser Ile Phe Leu Gly
 35 40 45
 Ile Ile Thr Leu Val Thr Ser Gln Thr Leu Phe Pro Ser Phe Gln Phe
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 Val Gly Ser His Pro Val Trp Ile Trp Ile Gly Gly Val Leu Gly Gly
 65 70 75 80
 Ile Phe Leu Thr Ser Asn Val Leu Leu Phe Pro Arg Leu Gly Ala Val
 85 90 95

Gln Thr Val Ile Leu Pro Ile Leu Gly Arg Ile Leu Met Gly Thr Leu
 100 105 110
 Ile Asp Ser Phe Gly Trp Phe His Ala Met Gln Leu Pro Met Thr Leu
 115 120 125
 Met Arg Phe Leu Gly Val Ile Ile Thr Leu Ala Gly Val Ile Val Ala
 130 135 140
 Val Val Leu Pro Asn Leu Lys Glu Lys Glu Ala Glu Thr His Gln Thr
 145 150 155 160
 Asn Leu Leu Gly Trp Arg Ile Trp Ala Val Ile Val Gly Ala Met Ser
 165 170 175
 Ala Ala Gln Gln Ala Ile Asn Gly Arg Leu Gly Val Leu Leu Glu Asn
 180 185 190
 Thr Ala Gln Ala Thr Phe Val Ser Phe Phe Ile Gly Phe Leu Ala Ile
 195 200 205
 Phe Ile Val Ser Leu Phe Ile Asp Arg Arg Leu Pro Lys Ile Ser Glu
 210 215 220
 Leu Lys Lys Ala Lys Pro Trp Asn Gly Ile Gly Gly Phe Leu Gly Ala
 225 230 235 240
 Ser Ile Val Phe Ala Thr Val Val Ala Val Pro Gln Ile Gly Ala Gly
 245 250 255
 Leu Thr Ile Met Met Gly Leu Ile Gly Gln Ile Leu Gly Ser Met Leu
 260 265 270
 Val Gln Gln Phe Gly Trp Trp Arg Ser Ser Lys Tyr Gly Ile Gln Ile
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